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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/776,348

02/12/2004

Yoshiyuki Ando

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MCGINN & GIBB, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER

TRIEU, THAI BA

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,348

Applicant(s)

ANDO ET AL.

Examiner

Thai-Ba Trieu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,5,6 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 7-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/27/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the Amendment filed on June 16, 2005. Claim 2 was amended, claims 15-18 were added; and claim 1 was cancelled.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5-6, and 14-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Church et al. (Patent Number 6,233,934 B1), in view of Suganami et al. (Pub. Number US 2003/0185672 A1).

Church discloses a variable nozzle control apparatus adapted for a turbocharger in an engine comprising:

a variable nozzle (64) having a vane (Not shown);

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an engine electronic control unit (22) for identifying an operating situation of the engine by detected outputs of sensors (20) in the engine and outputting an opening indication information of the vane (Read as position control signal via line connecting VGT 64 and desired geometry 67); and

an electronic control actuator (Not shown) for controlling an opening of the vane in response to the opening indication information of the vane transmitted from the engine electronic control unit (22),

wherein the electronic control actuator includes

an electronic control circuit section (Not Labeled) for receiving an opening indication information of the vane from the engine electronic control unit (22) and outputting an output signal (See Figures 1-2);

a driving section for receiving the output signal from the electronic control circuit and driving the vane of the variable nozzle through an output shaft (See Figures 1-2); and

an sensor (20) for detecting a rotation angle of the output shaft to output an actual angle signal of the output shaft to the electronic control circuit (22) (See Figures 1-2);

wherein the electronic control circuit section comprises:

an signal-converting device for converting the opening indication information of the vane into a target signal of the output shaft (See Figure 1),

a comparing device (67) for comparing the target signal from the signal converting device with the actual signal from the sensor, and outputting an indication signal corresponding to a difference between the target signal and the actual signal (See Figure 2),

a calculating device (70) for carrying out a calculation processing over the indication signal transmitted from the comparing device (See Figure 2), and

a motor driving logic (74,76,80,82,84) generating device for inputting the output signal to a motor driver of the driving section (See Figure 2; Column 5, lines 48-67, Column 6, lines 1-67, and Column 7, lines 1-15).

However, Church fails to disclose an angle sensor, an angle signal, a motor output shaft, and a reduction gear.

Suganami teaches that it is conventional in the electronically controlled actuator art for controlling turbocharger, to utilize an angle sensor (150) for detecting a rotation angle of the output shaft to output an actual angle signal of the output shaft (145) to the electronic control circuit (300); a motor (130) including a motor output shaft (Not Numbered); a reduction gear (141, 142) connected to said motor output shaft providing a rotational speed at reduction gear output shaft being less than motor output shaft; and said angle sensor (150) detecting a rotational angle of said reduction gear output shaft (See Figures 1, 6-7, and 9; (See Paragraphs [0008] - [0009], [0011], [0013], [0015]-[0017], [0025], [0048]-[0059], [0075], [0081])).

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It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized an angle sensor, an angle signal, a motor output shaft, and a reduction gear, as taught by Suganami, to improve the reliability and efficiency of the Church actuator device. Since the use of angle sensor/position sensor attached to the output shaft for measuring the turning angle of the output shaft would have prevented the vibrations of the output shaft being transmitted to the sensor, and then the reliability of the Church actuator device is improved.

Allowable Subject Matter

Claims 3-4 and 7-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed on June 17, 2005 have been fully considered but they are not persuasive. Accordingly, claims 2-18 are pending.

1. With regard to the applicants' arguments set forth on pages 9-14, applicants state that the reference to Church et al. (Patent Number 6,233,934 B1) does neither teach nor suggest the features of the claimed invention including:

- 1) an engine electronic control unit outputting an opening indication information of a vane;

2) an electronic control actuator including an electronic circuit section that receives the opening indication information of the vane from the engine electronic control unit.

Examiner respectfully disagrees with the applicants, since:

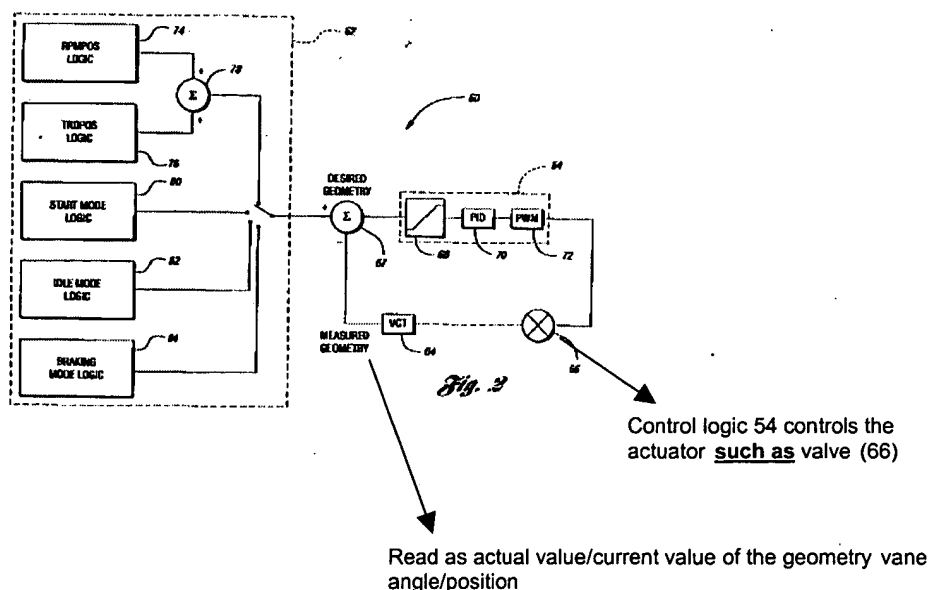
a. First of all, in claim 1, the recitations of “for identifying an operating situation ... and outputting indication information of the vane”; “for controlling an opening ... from the electronic control unit”; “for receiving the opening indication ...and outputting an output signal”; “ for receiving the output signal...through an output shaft”; “for detecting a rotational angle... to the electronic control circuit”; “for converting the opening indication information of the vane... output shaft; “for comparing the target angle signal ... actual signal”; “for carrying out ... the comparing device; and “for inputting the output signal... the driving section” are considered as the functional language. The combination of Church and Suganami disclose all the structural components of an system, which are read on those of the instant invention. Therefore, the Church-Suganami system is capable of performing the same desired functions as the instant invention having been claimed in claim 2.

b. Secondly, Church discloses that control logic 54 controls the actuator **such as** valve (66) (in Column 6, lines 19-20), and that it is appreciated that **other types of actuator/sensor arrangement** being contemplated (in Column 6, lines 1-2). Church use the term ***“such as valve”*** and ***“other types of actuator/sensor arrangement”***, which means that the Church’s actuator can be

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any actuators such as pneumatic/hydraulic/electric/electronic actuator or a valve 66; and any types of sensors such as linear variable inductance transducer, linear resistive transducer, angular sensor, or position sensor etc... being controlled by electronic control logic.

c. Further Church does disclose a closed control loop system 60 with a control logic (67) receiving a control signal/actual value/ current value of the vane position of the geometry turbine and comparing to the target value/desired position/desired angle of the geometry turbine. In column 5, lines 56-57, Church also discloses that "the turbocharger geometry sensor may be implemented in a variety of ways, and is preferably a cylinder integrated position sensor", which means that different kinds of sensor are used/applied in the Church system to indicate the position/angle of the vane of the geometry turbine.



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2. Additionally, on Page 11, second paragraph, applicants state that the Suganami et al. reference does not remedy the deficiencies of the Church et al. reference, since the Suganami et al. reference rather discloses a position sensor (150) attached to the output shaft of a motor 130; thus, a position sensor measures the angle of rotation of the output shaft of the motor.

The examiner disagrees with applicants, since applicants have not read the complete sentence and complete meanings as Suganami discloses in Paragraph [0058]. Suganami teaches “ in the prior art actuator, the position sensor being the mounted on the output shaft of the speed change mechanism..., and in this embodiment, the position sensor being mounted on the output shaft and measuring the angle rotation of the output shaft of the motor to control the output shat of the actuator”. This means that it is inherently as the output shat of the actuator is to be controlled/known, the movement of the position/angle of the vane of the geometry turbine will be recorded.

Paragraph [0029] of Suganami also discloses “the present invention providing a movable vane turbine with movables vanes, a motor, an output shaft driven for rotation by the motor and capable of controlling the angular position of the movable vanes....”; as well as, Paragraph [0056] discloses “the working angle of the movable vanes of the turbocharger being physically controlled such that the working angle of the movable vanes varies as a function of the number of output pulses provided by the position sensor (150).

3. On Page 12, sixth paragraph, applicants also state that the Church reference does not teach or suggest any output shaft at all.

The examiner agrees with the applicants; however, it would have been obvious to one having ordinary skill in the art not only to know that the variable geometry turbine would have had a shaft/rod/means on which the geometry turbine vane is rotating/moving/ adjusting its position/angle, but also to recognize in the case any actuator, being used to replace the valve (66), would have had a shaft/rod/link/connector.

Then, as the cylinder integrated position sensor, being disclosed by Church, is replaced by the angle sensor, being disclosed by Suganami, to improve the reliability and efficiency of the Church actuator device. Since the use of angle sensor/position sensor attached to the output shaft for measuring the turning angle of the output shaft would have prevented the vibrations of the output shaft being transmitted to the sensor, and then the reliability of the Church actuator device is improved.

4. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re*

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Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the reasons set forth above to prove that the combination is proper.

Conclusion

The IDS (PTO-1449) filed on April 27, 2005 has been considered. An initialized copy is attached hereto.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.


Additionally, the new Central FAX Number **(571) 273-8300** is effective on **July 15, 2005**. The old number (703-872-9306) will be routed to the new number until September 15, 2005.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
April 21, 2005



Thai-Ba Trieu
Primary Examiner
Art Unit 3748



COMMUNICATION INFORMATION FROM ENGINE ECU

VANE INDICATION OPENING

STATUS INDICATION INFORMATION

31

STATUS INFORMATION

COMMUNICATION INDICATION TO ENGINE ECU

18

18a

18b

18c

14a

14b

14c

19

20

21

22

23

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27

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29

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A4

A2

a

b

FIG. 4 **PRIOR ART**

